## BUSINESS SCENARIO

Analysts and end users are often asking: How does an item's sales contribute to the total sales of the category it is in? Or, how does a sales person contribute to their region? State to Country? Etc. In order to create these reports, the tool needs to be able to override the default aggregation and filtering rules. That is precisely what the group_aggregate function allows us to do.

The core group_aggregate string syntax is as follows:

**group_aggregate (<aggregation(measure)>, <groupings>, <filters>)**

The <groupings> and <filters> sections allow you to specifically say at what level you want the measure calculated (grouping) and what filter criteria the measure should have (filters). They can be replaced with **query_groups** and/or **query_filters** as a shortcut to simply use the default grouping and/or filtering of the primary query.

With just some quick syntax changes to the core group_aggregate string, you can create the 4 measures you see in the report below: **Region Sales, My Region Sales, Total Report Sales,** and **All Company Sales.** Each of these can then be used in the demoninator of a nested formula to create a contribution measure. One example of this in the report: **% to Region** (defined as Total Sales / Region Sales).

## REPORT EXAMPLE

REPORT FILTER:
Store Name IN [boston store #373,new york city store #24,los angeles store #76]

| Store Region | Store Name | Total Sales | Region Sales | My Region Sales | Total Report Sales | All Company Sales | % to Region |
|---|---|---|---|---|---|---|---|
| East | New York City Store #24 | 95266 | 11109350 | 169517 | 256719 | 83695546 | 0.86 |
| East | Boston Store #373 | 74251 | 11109350 | 169517 | 256719 | 83695546 | 0.67 |
| West | Los Angeles Store #76 | 87202 | 26279683 | 87202 | 256719 | 83695546 | 0.33 |

How was all of this done? Here are the intended calculation and the syntax for each:

**Region Sales -** Calculates the total sales for the region(s) the stores in the filter come from. Technically, this is trickier than it looks since not all stores from that region are represented in this report. The tool needs to execute a sub-query to find out what region this store comes from and then use that as the "where clause" of an outer query that groups at the region level. This way we can see the contribution of each of the stores in the filter to the region they come from as shown in the report.

DEFINITION: group_aggregate ( sum ( sales ) , { store region } , { } ) **My Region Sales -** For lack of a better name, this measure calculates a regional total as if the stores from that region in the filter are THE ONLY store in that region. Thus, the East number is made up of New York and Boston added together and West is the same as the Los Angeles store number since that is the only store from that region in the report.

DEFINITION: group_aggregate ( sum ( sales ) , { store region } , query_filters () ) **Total Report Sales -** What if you want to see how each of these stores contributes to a total of just these 3 stores added together? That is what this measure is designed to do. Pay attention to the filter criteria, but ignore the normal grouping rules. The {} syntax in the definition below essentially means "no grouping".

DEFINITION: group_aggregate ( sum ( sales ) , { } , query_filters ())
**All Company Sales -** Calculates "Total Sales" for the entire company so that we can see how each of these stores contributes to entire organization's revenues. This measure thus needs to "ignore" the standard grouping AND filtering rules for this report. The {} syntax in the definition below essentially means "no grouping" and "no filter".

DEFINITION: group_aggregate ( sum ( sales ) , { } , { } )
**% to Region -** This measure shows the contribution of each store to the total sales of the region it comes from. It is a nested formula using the already created formulas above. This is the Total Sales column divided by the Region Sales column for each row.

DEFINITION: sum ( sales ) / region sales
Change the number format to change this value to a percentage.